CLAIM SET AS AMENDED

1. (Currently Amended) A method of implementing ~~the~~ a multi-sectional encoding indexing method, ~~whether covering~~ comprising the steps of:

~~Step 1: An~~ providing an m sectional encoding structure ~~which is comprised of~~ including encoding structure values $\vec{A}_i'''$ ~~;~~ ~~$i=0,1,\ldots,m-1$~~, with each of the encoding structure values $\vec{A}_i'''$ ~~has~~ having at most 2^{k_i} varieties~~.~~;

~~Step 2:~~ transferring the encoding structure values $\vec{A}_i'''$ ~~can be transferred~~ into n encoding structure values ~~-~~ $\vec{A}_i''$ ~~. Upon transference~~, whereupon the encoding structure values $\vec{A}_i''$ will have k_i bits varied, and thus the summation of the k_i bits associated with the encoding structure values is equal to n, ($\sum_{i=0}^{m-1} k_i = n$ ~~.~~), wherein n stands for ~~the~~ an index bit width of the ~~Indexing Method.~~ multi-sectional encoding indexing method;

~~Step 3:~~ adjusting the encoding structure values $\vec{A}_i''$ ~~operated~~ into encoding structure values $\vec{A}_i'$ by using a bit-by-bit AND operation with $(2^n - 1)$ ~~by AND bit by bit~~, ~~can be transferred to $\vec{A}_i'$ of n~~ the encoding structure values $\vec{A}_i'$ having an n bit width~~.~~; and

determining whether or not the encoding structure values $\vec{A}_i'$ are transferred into $\vec{A}_0 \oplus \vec{A}_1 \oplus \ldots \oplus \vec{A}_{m-1}$, ~~Step 4: If~~ and if the encoding structure values $\vec{A}_i'$ ~~is~~ are

transferred into the $\vec{A}_0 \oplus \vec{A}_1 \oplus \ldots \oplus \vec{A}_{m-1}$, then bits of $\vec{A}_i$, from $n-(\sum_{j=0}^{i-1} k_j + 1)$ to $n - \sum_{j=0}^{i} k_j$, will become variable ones~~.~~,

wherein ~~(~~$\sum_{j=0}^{-1} k_j = 0$ ~~is assumed for short.)~~ and the $\vec{A}_0 \oplus \vec{A}_1 \oplus \ldots \oplus \vec{A}_{m-1}$ has a ~~feature~~ characteristic that different output values can be produced as long as the values ~~input~~ inputted vary, ~~i.e. having the~~ and have a collision free effect. ~~of "collision free."~~

2. (Currently Amended) The method of implementing ~~the~~ a multi-sectional encoding indexing method~~,~~ according to the claim 1, ~~two methods are presented and can be~~ wherein the transferring step is applied ~~single~~ individually or ~~mingled~~ mixed, ~~as step 2 required. The purpose of both methods is to minimize~~ and in both ~~either~~ cases, the k_i are minimized, ~~every with a view to~~ thereby shortening the index n bit width, in which, $\sum_{i=0}^{m-1} k_i = n$.

3. (Currently Amended) The method of implementing ~~the~~ a multi-sectional encoding indexing method~~,~~ according to the claim 1, ~~the first method is to observe~~ wherein the transferring step includes observing each of the encoding structure values $\vec{A}_i^{m}$, and if the variable bits are not at ~~the~~ a right side, ~~adjust them~~ adjusting the bits.

4. (Currently Amended) The method of implementing ~~the~~ a multi-sectional encoding indexing method~~,~~ according to the claim 1, the ~~second method can be~~ transferring step is applied under ~~the following~~ conditions when:

$\min(\vec{A}_i''') \le \vec{A}_i''' \le \max(\vec{A}_i''')$, and k_i ~~then satisfy~~ satisfies the formula:

$$2^{k_i-1} < (\max(\vec{A}_i''') - \min(\vec{A}_i''') + 1) \le 2^{k_i},$$

~~add or subtract~~ performing the step of adding or subtracting a certain value to or from the encoding structure value, $\vec{A}_i'''$, thereby converting ~~it into whose~~ the k_i bits that are variable, wherein~~. A particular~~ the certain value for subtraction is $\min(\vec{A}_i''')$.

5. (Currently Amended) An implementation method of ~~the~~ a reverse compensation indexing method, ~~whether covering~~ comprising the steps of:

~~Step 1: The~~ providing a two-sectional encoding structure is ~~comprised of~~ including encoding structure values $\vec{A}_i'''$ ~~i = 0,1~~, where i = 0, 1, and the value of each encoding structure is $\min(\vec{A}_i''') \le \vec{A}_i''' \le \max(\vec{A}_i''')$~~;~~ wherein k_i ~~in which satisfy~~ satisfies the following formula: $2^{k_i-1} < (\max(\vec{A}_i''') - \min(\vec{A}_i''') + 1) \le 2^{k_i}$;

adding or subtracting a certain value to or from the encoding structure values $\vec{A}_i'''$, ~~Step 2: After~~ and after adding or subtracting a certain value to or from the encoding structure values $\vec{A}_i'''$, k_0 bits of an encoding structure values $\vec{A}_0''$ and k_1 bits

of the encoding structure values $\vec{A}_1''$ ~~may be~~ change, ~~and~~ wherein $\sum_{i=0}^{1} k_i = n$, in which n is ~~the~~ a width of ~~the~~ index bits~~.~~;

~~Step 3:~~ adjusting the encoding structure values $\vec{A}_i''$ ~~, operated~~ into encoding structure values $\vec{A}_i'$ by using a bit-by-bit AND operation with $(2^n - 1)$ ~~by AND bit by bit, is transferred to~~ the encoding structure values $\vec{A}_i'$ ~~of~~ having n bits;

~~Step 4:~~ obtaining $\vec{A}_0$ by reversing the bits of $\vec{A}_0'$; and

operating on $\vec{A}_0$ ~~, obtained by reversing the bit locations of $\vec{A}_0'$, is operated~~ with $\vec{A}_1 (= \vec{A}_1')$ by exclusive-OR, ~~i.e.,~~ ($\vec{A}_0 \oplus \vec{A}_1$), thereby producing ~~; The feature is that the~~ output values ~~produced by the indexing method will be~~ which are different if ~~input of~~ different values are inputted~~, i.e. having the~~ and have a collision free effect. ~~of "collision free."~~

6. (Currently Amended) The method of implementing ~~the multi-sectional encoding~~ a reverse compensation indexing method~~,~~ according to the claim 5, ~~the outstanding property of the reverse compensation indexing method to be illustrated:~~ wherein if min(VPI) =0 and min(VCI) =0, then ~~this~~ a single circuit can be applied in

$$\begin{matrix} \max(VPI) = 2^{k_0} - 1 \\ \max(VCI) = 2^{n-k_0} - 1 \end{matrix}, k_0 = 0,1,\ldots,n$$

up to (n+1) occasions, all of which have the collision free effect. ~~of "collision free."~~

7. (Currently Amended) A method ~~that corresponds~~ for implementing multi-sectional encoding structures corresponding to a single indexing table ~~is presented. The~~ in an Asynchronous Transfer Mode receiving unit ~~of the ATM can support~~ which supports different ~~VPI/VCI~~ Virtual Path Identifier/Virtual Connection Identifier (VPI/VCI) connection amounts ~~by relatively~~ entries, comprising the step of:

adding to or subtracting from ~~the Indexing Table Memory~~ an indexing table memory ~~equipped~~ in ~~the~~ said receiving unit, ~~in coordination~~ by coordinating with ~~the TBWA~~ a Table Bit Width Adjuster (TBWA) circuit~~.~~; and

~~The~~ changing an ~~input~~ inputted exclusive-OR configuration of the VPI and the VCI ~~may be changed~~ according to ~~the~~ a bit width of the indexing table ~~Memory~~ memory.

8. (Currently Amended) A structure ~~is presented that corresponds~~ for implementing multi-sectional encoding structures ~~to shared memories~~ in a shared memory structure of an Asynchronous Transfer Mode (ATM) switch~~.~~ , comprising the step of:

providing a Table Bit Width Adjuster (TBWA) circuit with multiple input ports r, and an indexing table memory, the indexing table memory have sections ~~The Indexing Table Memory of~~ for e entries, from Entry 0 to Entry e-1, ~~i.e.~~ wherein Entry 0, Entry 1, …to Entry e-1~~.~~, and $\sum_{i=0}^{r-1} 2^{TBW_i} = e$,

wherein ~~then the~~ ~~Base Pointer~~ a base pointer (BP) of ~~the~~ an input unit 0 is BP_0, and input units ~~those~~ of ~~the~~ base ~~pointer~~ pointers for other r-1 input ports is ~~figured out~~ determined by the Table Bit Width (TBW) and Base Pointer (BP) of the previous unit, ~~. Its~~ using a formula ~~is~~:

$$BP_i = BP_{i-1} + W * 2^{TBW_{i-1}}, i = 1,...,r-1 \cancel{.},$$

wherein ~~The purpose of calculating~~ every ~~BP~~ base pointer is calculated in order to ~~orderly and~~ compatibly allocate every section of the indexing table memory used by different input ports~~. Such kind of~~ whereby the shared memory structure ~~can more~~ effectively ~~adjust the~~ adjusts a connection amount of every input port, thereby ~~with limited~~ minimizing an amount of indexing table memory which is required.

9. (Currently Amended) ~~An applied~~ A method ~~of~~ for implementing multi-sectional encoding structures which divided into sets of two sections, wherein ~~and~~ every set is regarded as a basic unit for implementing ~~the~~ a reverse compensation indexing method. ~~Therefore, this kind of multi-sectional encoding structures can have the same flexibility necessary for application of the reverse compensation indexing method.~~